



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE THEORY OF LOAN CREDIT IN RELATION TO CORPORATION ECONOMICS

J. PEASE NORTON

Two chapters of societal economics cover the field of the distribution of wealth. The first studies the distribution of wealth *destined* for consumption and the second the distribution of wealth *destined* for production. In the first belong questions of individual welfare, and in this field the active agitations of the parties play. Socialism, for instance, would find its solution of one problem in a more equitable distribution of wealth, holding that Weber's law suggests that on the assumption of equality of enjoyment, equality of properties maximizes this ophelimity. Nor is it an answer to say that enjoyments are unequal; for even then the socialist case may stand.

Without more than suggesting these well worn problems, I call you attention to a parallel field, less clearly studied, but of far greater importance, the economics of the distribution of the control of wealth *destined* for the production of more wealth. I am conscious that in these words there may seem to be no distinction, since if man is wealth, all wealth consumed under the first division is also under the second. If we include men as wealth as Professors Fisher and Pareto do, then we should term wealth destined for consumption as wealth destined for personal production. There is no confusion in thought, although I take this opportunity to prevent confusion in wording. In the history of political economy, there has been such a distinction since the beginning, and this contrast is further heightened by that parallel conception of Professor Clark's, of an unchang-

ing body of capital, undergoing transmutation, but eternally existent. It is the distribution of this capital, viewed from the standpoint of control and not consumption that deserves greater attention than it has yet received.

Too much emphasis has been laid on the marginal utility side of economics, *i. e.*, on the enjoyment of the masses. In the crass struggle for existence, as Professor Sumner has shown, individual against individual, group against group, society against society, each group strengthens itself by co-operation and by systems of rewards within, but the problem is not so much in maximizing enjoyment (for enjoyment is after all secondary, since so much is unconscious and unreasoning) the real problem is to keep up and increase production.

Consequently, an equally important aspect to emphasize is equality of opportunity rather than equality of enjoyment, and the gain to society which comes from every method of distribution of productive wealth which puts control quickly into the hands of the men who can, and which takes it from the hands of the men who cannot.

This is not a defense of Wall Street methods, with a view to palliating obvious excesses, but an attempt to point out the fundamental relations among various economic magnitudes, which in their interaction through the play of human motives, opportunities and capabilities, result in making the devices of credit and the complex methods of Wall Street financing as great an engine of production of more wealth as the arts of the farmer in digging the crops from the ground or new inventions which render the day's work of the laborer or the dollar of the capitalist twice as productive. There are three

distinctive questions in the situation at large. (i) The causes of the trend towards combination. (ii) The nature of instruments of credit. (iii) The lack of knowledge on the part of the public not so much as to what the statistics of earnings and costs are, as to the question what instruments of credit are with respect to security.

The standpoint which is the basis of the rapid advances in the Sumnerian sociology, the philosophy which views the phenomena of society from the standpoint of individuals, groups and societies—all of which is capable of statistical interpretation and measurements—is equally useful in the study of the distribution of productive wealth. The subject is best viewed, not from the standpoint of commodity, its demand and supply with price as a major factor, but from the standpoint of the individual, group, firm, corporation and trust, struggling with competitors, seeking to maximize its profits. The laws of monopoly in general apply, not the laws of competition. The question of prices is of minor importance in this subject. Goods, I care not what, are of two great classes, *competitive* and *non-competitive*. Competitive goods cover the staples capable of being graded. Non-competitive goods cover the great bulk of wealth, which is not capable of being graded with any accuracy. Prices are a matter of policy and not a result of an objective supply and demand. Every individual, firm, corporation or trust sells each article with reference to the maximum sum total of profit on all articles, and not with reference to the maximum profit on any particular article. In other words, each concern seeks to maximize its exploitation of the selling field of its influence.

Even the smallest stores are monopolies resulting from combination of location, non-competitive goods, skill and experience in what might be called the psychology

of customers, and instead of looking for laws of supply and demand for any article, we should look for skill in exploitation of desires created, and above all skill in the creation of desires. Consequently, what competition there is, is between concerns selling goods on monopoly principles along the lines of greater or less skill in creating desires. Prices of competitive articles are then fixed by competition, it is true, but not according to our laws of supply and demand. The price policy of the concern, which is a limited monopoly, determines these prices on the basis of the maximum sum total of profit on all goods, competitive and non-competitive.

Competitive articles exist because buyers can detect small differences. If it is easily possible to detect differences between two articles of the same class of say under 10 per cent of cost value at the same manufactory, the article is competitive. If experts cannot detect differences of 20 per cent of cost from inspection, as I have been told is the case in such a commodity as linen handkerchiefs, the unintelligent consumer cannot detect differences of 60 to 100 per cent. Mr. John Wanamaker stated before the Industrial Commission that his experts could not detect differences of fifty cents in costs of two pairs of shoes without ripping them into pieces. Comparison between prices of different stores or manufactories is, therefore, impossible in the degree to which the goods are non-competitive. The more that they are non-competitive, the more are they sold, not with reference to the prices charged by others, but with reference to what the traffic will bear. It would seem that the principles underlying railroad rates so clearly worked out by President Hadley underlie the price policy of modern business in general.

Price-slashing is done in competitive goods, because

it is only in these goods that consumers can compare prices. It is the essential feature of price policy that consumers shall believe competition is intense, and hence the parade in advertising competitive goods at cost and below cost. Why prosperity instead of ruin ensues for the concern is because the number of competitive articles is small in comparison with the number of non-competitive articles and price-slashing is one effective weapon in creation of the selling field.

There is, at the same time, one aim common to all concerns, to destroy competitive articles. Destruction of competitive goods consists in rendering them by some means non-competitive. One effective means for destroying competitive goods is by use of brands and new names, thereby producing artificial monopolies lasting the force of advertising. The price-per-pound test is destroyed by the use of packages. In food packages, paste-board supplies the concept of bulk. One great corporation has within a few years revolutionized the business in crackers, formerly competitive goods from the standpoint of the manufacturer, producing thereby an artificial monopoly through extensive advertising, brands and trademarks. We should not be confused by the fact that when competitive goods are destroyed for the producer, these goods which were formerly non-competitive for the retailer become thereby bitterly competitive for him. The reason is that consumers through advertising by the producer, come to know prices, and consequently price-slashing by retailers ensue. It is the practice of great department stores to cut to the quick the prices of well advertised cereals, patent medicines or food brands of which the price is widely known, entailing heavy losses, for the sake of the tremendous effect it produces in extending their

selling field through the sympathetic buying of other non-competitive goods because these few competitive goods are lower than elsewhere.

On the other hand, competitive goods for the jobber and wholesaler, like beans, rice, etc., are non-competitive for the retailer, because consumers cannot detect differences of perhaps 50 to 200 per cent on wholesale price. Consequently, the same grades are sold in the same retail stores at different prices, that the exploitation of each customer may be made as complete as possible, the customer paying all that he is willing to towards the maximum sum total of profit; and at different stores these goods are sold at different prices ranging up to often as high as 200 per cent range of the wholesale price. For instance, last winter at different stores, a few blocks apart, in New Haven, and on the same day the standard grade of kerosene oil was sold at prices ranging from eleven cents, one cent below cost, up to twenty cents per gallon.

Destruction of competitive goods is going along upon many lines. The following interesting side development is now under full headway. Well advertised brands, non-competitive for producer, become thereby competitive for the retailer. Although they are necessary articles for the latter to handle, they are unpopular with him because they do not contribute to the profit. To stem this hostile discrimination of the retailer, large owners of brands are becoming the owners of retail stores, thereby increasing the destruction of competitive goods, and increasing the monopoly of the selling field created through advertising. Examples of this movement are to be found with ease in shoes, tobacco goods, groceries and many other lines.

Consequently, I believe, monopoly prices are more

than ever the law of the business world. In fact, there never was a competitive price fixed by theoretical supply and demand curves except in the case of a few staples capable of being graded. Great staples capable of being graded are undoubtedly subject to the competitive prices of the exchanges, provided there are many buyers, and many sellers. But once let the supply become concentrated in the hands of a group, and the market disappears. The produce exchange is rather a relic of the past than a development of the present. Its existence is bound up with the existence of competitive goods, but the goal of business is the destruction of competitive goods. The weapons are fictitious grades, brands, patents, graded prices, the control of supply by any and every means, and the creation of demand by advertising.

A world of commerce is then primarily engaged, not with the satisfaction of desires where many books on economics commence, but with the creation of desires and this involves the whole theory of suggestionism and hypnotism. An authority on economics once remarked that the fundamental axiom of political economy is that man is a rational intelligent animal, but the difficulty is that we have confused the rule with the exception.

Gradually as great concerns have been built up, there has been added, what has been termed by Professor Sumner, the "monopoly of superiority," *i.e.*, a combination of skill, location, brands, patents, methods, etc., which *cannot* be duplicated, and if imitated result in a higher cost of production.

This brings us to *cost of production* which is an essential conception at this point. The sources of this classification are most varied, but I am particularly indebted to the little work by C. J. Watts on "The cost

of production," and the many articles that have been written by various authors upon questions of running expenses and fixed charges in railroads. This chart is simply schematic, but it is one used in many manufacturing plants, and is useful because it makes the abstract reasoning somewhat more concrete.

COST OF PRODUCTION.

Manufacturing Department.

(a) Material.

Total value of piece material.

Manufacturing Supplies, *i.e.*,
belting, emery, cloth,
brooms, fuel, oil, etc.

(b) Labor.

Total value of piece-wages
of "productive labor."

Departmental "non-productive" labor, *i.e.*, foreman, clerks, truckers, oilers, roustabouts, etc.

General "non-productive" labor, *i.e.*, shipping clerks, stock clerks, time-keepers, engineers, etc.

Buying and Selling Department.

Traveling expenses, salaries, freights, telephone and telegraph, express charges and advertising.

Fixed Charges.

Rent, taxes, etc., interest.

Risk.

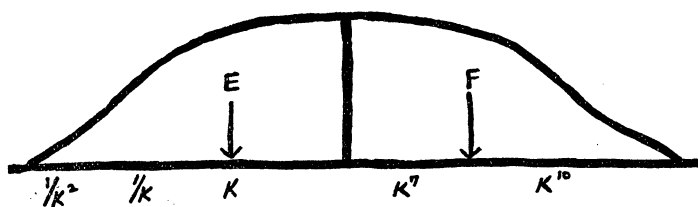
Insurance against various hazards, some of which vary with output as "*uncollectible debts*" and others such as "*fire*" do not.

A casual glance suffices to show that these items are arranged so that in the left column are the items which are easily chargeable to each piece produced, and tend to vary directly with the output, and in the right column are the items which do not vary directly with the output, but follow in gradation from manufacturing sup-

plies and so-called departmental "non-productive" labor, which increases considerably if output increases greatly, up to taxes and interest, which permit of tremendous increase of output, with comparative slight increase in themselves.

Let us call E the sum of the items in the left column for a given time, place and firm, *i. e.*, total expense varying with output. F is the sum of the items in the right column, the relatively fixed charges, including interest (I).

In strictness, there is no hard and fast line between running and fixed expenses, but like many other magnitudes in economics and biology, the correct statement is that expenses may be ranged along a frequency distribution according to the ratio which they vary with output.



The vertical scale in the above figure represents amount of expense and the horizontal axis the form-rate at which expense varies with output. To make a concrete case, we may assume the ratio of direct variation K , and then vary K from K^∞ to $1/K^\infty$, placing the amount of expense opposite the appropriate value of the power of K .

There is little doubt that this curve could be easily fitted by either Professor Edgeworth's types of frequency curves or by Professor Karl Pearson's skew curves, and along these lines, I believe, great development is possible for theoretical economics, since by posit-

ERRATA

Page 42, line 8 (from bottom). For the first K in this line
read K° .

Page 43, line 6 (from top). For K read K° .

ing these frequency distributions severe thinking will be able, step by step, to work out the various cases. We may now split the frequency curve at the median, and take the average of each half of the frequency array. The assumption of the theory of railway rates is that the average of the left half is about K , *i. e.*, direct variation, and this quantity is termed running expense, and will be designated as E . The average of the right half is a power of K sufficiently high to be treated in analysis as a constant, provided output is not increased too greatly. For instance, if $K = .10$, K^{10} the average variation of fixed expense, is $(.10)^{10} = .000000001$, an almost negligible variation. In the following analysis, letters are used to represent the variables as explained in the following table:

TABLE OF VARIABLES.

No.

1. A, B, C, etc. = different articles.
2. π_a, π_b = selling price for articles A, B, etc.
3. ω_a = output of article A.
4. E_a = total expense varying with output, *i. e.*, "running expenses."
5. F_a = total expenses not varying with output, *i. e.*, "fixed expenses," not including interest.
6. P_a = profit.
= Sales—running expenses—fixed expenses.
7. P'_a = profit upon article
= price—piece cost—fixed expense cost.
8. $\omega_a \pi_a$ = value of sales.
9. $e'_a = \frac{E_a}{\omega_a}$ = piece cost per article.
10. $P'_a = \frac{P_a}{\omega_a} = \frac{\omega_a \pi_a - E_a - F_a}{\omega_a} = \pi_a - e'_a - \frac{F_a}{\omega_a}$
11. C = original capital of entrepreneur.
12. C' = borrowed capital, *i. e.*, credit.

The next three quantities depend on the preceding for definition, and are capable of double definition according to whether we take as our fundamental variable

cost value or selling value. To provide for both possibilities, I have given the two definitions in each case.

Cost value <i>i.e.</i> , $E_a + F_a$	Selling value <i>i.e.</i> , $\omega_a \pi_a$
13a $p_a = \frac{\omega_a p'_a}{E_a + F_a}$ = percentage of profit on cost of production.	13b $p = \frac{\omega_a p'_a}{\omega_a \pi_a} = \frac{p'_a}{\pi_a}$ = percentage of profit on selling value or sales.
14a $e = \frac{\omega_a e'_a}{E + F}$ = percentage of varying expense reckoned on total cost of production.	14b $e = \frac{\omega_a e'_a}{\omega_a \pi_a} = \frac{e'_a}{\pi_a}$ = percentage of varying expenses on sales.
15a $n = \frac{E_a + F_a}{C}$ = number of times capital is turned over reckoned under cost of production.	15b $n = \frac{\omega_a \pi_a}{C}$ = number of times capital is turned over reckoned under selling value.

The definition of (n)* (15b) as sales value divided by capital is the common one in the business world. On the other hand, (p) and (e) are generally computed on cost, although 13b is often used. In many kinds of business p is computed on the wholesale price of goods, *i.e.*, a fraction of e . It seemed wise, therefore, to provide at least for two possibilities. We are free to use the formulæ that are most convenient in expression, since the definitions are of such a form that the quantities are readily transferable. At the same time no confusion can arise since the main possibilities are clearly provided for.

The balance of the paper may be divided into four parts. (I) The percentage on capital realized by the concern operating without credit. (II) The percentage on capital realized by the concern operating with credit. (III) The gain experienced by the use of credit meas-

* To the reader unfamiliar with the conception of rate of turnover, reference should be made to Professor Irving Fisher's article, "The role of capital in economic theory," *Economic Journal*, 1897, in which the importance of this factor was first enunciated.

ured in percentage on capital. (IV) Discussion of this formula with reference to "high finance."

(I.) *Percentage on capital realized by the concern operating without credit.*

Net profit = sales value — running expenses — fixed expenses.

It is plain that there are eight cases, as we use definitions (a) or (b) for quantities (p), (i_3), (e) (i_4) and (n) (i_5). The table of possibilities follow:

Cases.	Form.	Expressions.	(p)	(e)	(n)
i	aaa	I3a, I4a, I5a-----	$\omega p'$	$\omega e'$	$E + F$
			$E + F$	$E + F$	C
ii	aab	I3a, I4a, I5b-----	$\omega p'$	$\omega e'$	$\omega \pi$
			$E + F$	$E + F$	C
iii	aba	I3a, I4b, I5a-----	$\omega p'$	e'	$E + F$
			$E + F$	π	C
iv	abb	I3a, I4b, I5b-----	$\omega p'$	e'	$\omega \pi$
			$E + F$	π	C
v	baa	I3b, I4a, I5a-----	p'	$\omega e'$	$E + F$
			π	$E + F$	C
vi	bab	I3b, I4a, I5b-----	p'	$\omega e'$	$\omega \pi$
			π	$E + F$	C
vii	bba	I3b, I4b, I5a-----	p'	e'	$E + F$
			π	π	C
viii	bbb	I3b, I4b, I5b-----	p'	e'	$\omega \pi$
			π	π	C

It will not be necessary to point out to this audience more than a single case and then produce the results for the remaining cases, reached in exactly the same manner.

Case i. Let

$$p = \frac{\omega p'}{E + F}, e = \frac{\omega e'}{E + F}, n = \frac{E + F}{C}.$$

It is plain that value of sales is $nC (1 + p)$, varying expenses $e (nC)$ and fixed expense F . Consequently,

net profit = sales — varying expenses — fixed expenses ;

$$(16) \text{ net profit} = nC (1 + p) - e (nC) - F.$$

Dividing by C , we obtain the percentage of net profit on capital of the entrepreneur, operating without credit in terms of turnover, capital, percentage of profits, percentage of varying expense, and fixed expenses. Percentage net profit

$$\begin{aligned} &= n(1+p) - en - F/C \\ (17) \quad &= n(1+p-e) - F/C \end{aligned}$$

Working out the remaining seven cases, we obtain values for the net percentage profit, given in the table below. All results represent the same quantity—net percentage profit, but expressions differ according to various commercial definitions of p , e and n .

TABLE OF EXPRESSIONS FOR NET PERCENTAGE PROFIT.

Cases.	No.	Possibilities.	Net Percentage Profit.
i	(18)	13a, 14a, 15a	$n(1+p-e) - F/C$
ii	(19)	13a, 14a, 15b	$n(1+e-pe) - F/C$
iii	(20)	13a, 14b, 15a	$n((1+p)(1-e)) - F/c$
iv	(21)	13a, 14b, 15b	$n(1-e) - F/C$
v	(22)	13b, 14a, 15a	$n\left(\frac{1}{1-p} - e\right) - F/C$
vi	(23)	13b, 14a, 15b	$n\left(1 - \frac{e}{1-p}\right) - F/C$
vii	(24)	13b, 14b, 15a	$n\left(\frac{1-e}{1-p}\right) - F/C$
viii	(25)	13b, 14b, 15b	$n(1-e) - F/C$

To illustrate these formulae, suppose the stock of a retail store is turned over ten times per year. Assume the percentage of profit on total cost to be thirty per cent, and the percentage of varying expense ninety per cent of total expense. The fixed charges might be \$500 and the capital of the entrepreneur \$1,000. Then the percentage realized on capital would be by (18)

$$\begin{aligned} &10(1 - .30 - .90) - 500/1000 \\ &400\% - 50\% = 350\% \end{aligned}$$

In certain kinds of business, one set of definitions would be more useful than another from the standpoint

of practical statistics, and in some instances the treatment of E alone as the fundamental variable would be useful. The definitions of case vi are widely used by manufacturers and wholesalers who sell by catalogue. A list price is the basis for all discounts. Consequently, the percentage of profit is computed on the maximum price charged, *i. e.*, the list price. Where the list price is maintained on the one price basis to all, these definitions are very convenient. But, when, as is generally the case, the list price is simply the basis of charging what the traffic will bear, by giving a different discount to each customer, these definitions are not so convenient as some of the others.

(II.) *The percentage on capital realized by the concern operating with credit.*

The volume of the turnover is now increased from C to $C + C'$; *i. e.*, the original capital (C) plus the borrowed capital (C').

Case (i). Let

$$p = \frac{op'}{E + F} \quad e = \frac{oe'}{E + F} \quad n = \frac{E + F}{C + C'}$$

Net profits = sales — varying expenses — fixed expenses — interest.

Substituting for sales, $n (1 + p) (C + C')$, varying expense, $e n (C + C')$ fixed expenses, F , and interest $C' i$, we have: (26) net profits

$$= n (1 + p) (C + C') - e n (C + C') - F - C' i.$$

Dividing the above expression by C , we obtain the percentage net profit on capital.

Percentage net profit

$$\begin{aligned} &= \frac{C + C'}{C} (n (1 + p)) - \frac{C + C'}{C} (ne) - \frac{F}{C} - \frac{C'}{C} i \\ (27) \quad &= \frac{C + C'}{C} (n (1 + p - e)) - \frac{F}{C} - \frac{C'}{C} i \end{aligned}$$

The percentage net profit is given for the eight possible cases in the following table :

TABLE NET PERCENTAGE PROFIT WITH CREDIT.

<i>Cases.</i>	<i>No.</i>	<i>Net percentage profit.</i>
i	(27)	$\frac{C+C'}{C} (n (1+p-e)) - F/C - \frac{C'}{C}i$
ii	(28)	$\frac{C+C'}{C} (n (1+e-pe)) - F/C - \frac{C'}{C}i$
iii	(29)	$\frac{C+C'}{C} (n (1+p) (1-e)) - F/C - \frac{C'}{C}i$
iv	(30)	$\frac{C+C'}{C} (n (1-e)) - F/C - \frac{C'}{C}i$
v	(31)	$\frac{C+C'}{C} (n (\frac{1}{1-p} - e)) - F/C - \frac{C'}{C}i$
vi	(32)	$\frac{C+C'}{C} (n (1 - \frac{e}{1-p})) - F/C - \frac{C'}{C}i$
vii	(33)	$\frac{C+C'}{C} (n (\frac{1-e}{1-p})) - F/C - \frac{C'}{C}i$
viii	(34)	$\frac{C+C'}{C} (n (1-e)) - F/C - \frac{C'}{C}i$

(III.) We are now in a position to measure the gain in percentage of net profit on capital realized by the same concern operating with and without credit. It is plainly the difference between the expressions given in the two preceding tables for the respective cases.

Without going in detail into the results under the various possibilities with respect to whether the company increases its business solely through the influx of credit or in addition through a readjustment of the factors (n), (p) and (e), I shall consider briefly the case in which the business increases and (n), (p) and (e) remain constant, and secondly the case in which (n), (p), and (e) change. It is probable that careful study along the lines of maxima and minima would be valuable, but at this point algebraic methods are sufficient for our purposes.

To illustrate the method, case (i) is worked out in detail under the assumption that the business increases

solely through the influx of credit and the factors (n), (p) and (e) remain unchanged, an assumption which would be seldom realized. Subtracting (17) from (27), we obtain (35).

(27) Net percentage profit with credit

$$= \frac{C+C'}{C} (n(1+p-e)) - F/C - \frac{C'}{C}i$$

(17) Percentage net profit without credit

$$= (n(1+p-e)) - F/C$$

Gain in percentage of net profit through use of credit

$$= \frac{C'}{C} (n(1+p-e)) - \frac{C'}{C}i$$

$$(35) \quad = \frac{C'}{C} (n(1+p-e) - i)$$

In words, the gain realized by the use of credit is the product of two factors, the ratio of borrowings to capital and the difference between the turnover times the net percentage profit on total cost and the rate of interest.

The following table gives the expressions of this gain for the eight cases that we have previously used.

TABLE OF EXPRESSIONS FOR THE GAIN THROUGH THE USE OF CREDIT.

Cases.	No.	
i	(35)	$\frac{C'}{C}(n(1+p-e) - i)$
ii	(36)	$\frac{C'}{C}(n(1+e-pe) - i)$
iii	(37)	$\frac{C'}{C}(n(1+p)(1-e) - i)$
iv	(38)	$\frac{C'}{C}(n(1-e) - i)$
v	(39)	$\frac{C'}{C}\left(n\left(1 - \frac{e}{1-p}\right) - i\right)$
vi	(40)	$\frac{C'}{C}\left(n\left(\frac{1}{1-p} - e\right) - i\right)$
vii	(41)	$\frac{C'}{C}\left(n\left(\frac{1-e}{1-p}\right) - i\right)$
viii	(42)	$\frac{C'}{C}(n(1-e) - i)$

If now we assume that the volume of sales increases with a readjustment of the turnover, percentage of profit and percentage of varying expense, which is probably the ordinary case applicable to the industrial combinations, the expression of percentage, net profit on capital, assuming the original capital the same, is easily obtained.

(27) Net percentage profit with credit

$$= \frac{C+C'}{C} (n_2 (1 + p_2 - e_2) - F/C - \frac{C'}{C} i$$

(17) Net percentage profit without credit

$$= n_1 (1 + p_1 - e_1) - F/C$$

(36) Gain in net percentage profit through use of credit

$$= \frac{C'}{C} (n_2 (1 + p_2 - e_2) - i) + (n_2 - n_1) \\ + (n_2 p_2 - n_1 p_1) + (n_1 e_1 - n_2 e_2)$$

(IV.) *Discussion of formula (36).*

In discussion of the principles, one formula is as useful as another. I shall, therefore, confine the discussion to formula (36), in which the gain in net percentage profit is

$$\frac{C'}{C} (n_2 (1 + p_2 - e_2) - i) + (n_2 - n_1) + (n_2 p_2 - n_1 p_1) + (n_1 e_1 - n_2 e_2)$$

The subscript (2) refers to the value of the factors under the régime of credit with the larger amount of business, and (1) to the value of the factors when borrowed capital is not used. We may on inspection derive the following conclusions:

(a) Provided $n_1 = n_2$, $p_1 = p_2$ and $e_1 = e_2$, as long as the product of the rate of turnover times unity plus the difference of percentage of profit and varying expense, *i.e.*, $(n(1 + p - e))$, is greater than the interest rate, (i), gain arises through the use of credit, and it is directly

proportioned to the amount of credit extension and inversely proportioned to the amount of capital.

(b) The rate of turnover (n) is very considerably under control, and the methods of increasing (n) lie primarily in advertising, *i.e.*, in the extension of the buying field. An efficient organization of the departments of the concern tends to raise (n), by diminishing the stock necessary to provide for fluctuations in the arrivals and shipments of the commodity. A reduction of percentage of profit, (p), increases the rate of turnover, less in non-competitive than in competitive goods.

(c) The variable (p), *i.e.*, percentage of profit on total costs is largely under control, and its value is fixed at the figure which will maximize the sum of the expressions $n(1 + p - e)$, of which there are as many as there are articles sold. In highly non-competitive goods, this is easily accomplished by maximizing for each non-competitive article the expression $n(1 + p - e)$. In highly competitive goods, the percentage of profit is fixed with reference to the effect on the selling field, and a negative value to $n(1 + p - e)$ for competitive goods will often temporarily increase the total sum of profit on all goods through sympathetic buying occasioned by extensive advertising. At the same time, every effort will be made to destroy permanently the competitive article.

(d) In the successful industrial combinations, the direction of motion lies in (i) increasing the ratio C'/C ; (ii) increasing the turnover, *i. e.*, making n_2 greater than n_1 , which is one of the most effective lines of advance, and is the secret of the modern department store; (iii) in the reduction of e , although in several lines the opposite takes place owing to increased advertising costs, a disadvantage which is more than counterbalanced by the increases of n and p .

(h) The factor (i), the interest rate, connects every business of the country with the subject of financing. The direction of gain is plainly in the reduction of (i). Credit takes three forms, (i) the loan of goods direct; (ii) the loan of capital for short periods; (iii) the loan of capital for long periods. These forms are determined by the security of the loan, the person of the lender, the rate of interest and the duration of the loan, and not by any essential difference in the nature of the transaction.

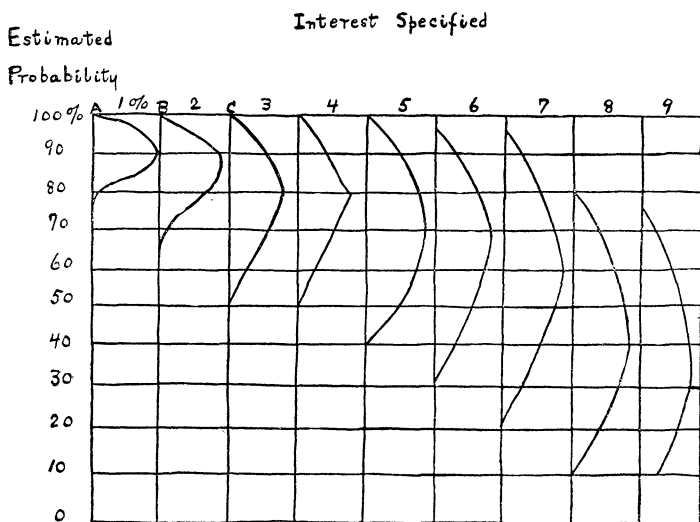
(i) In the case of the loan of goods direct, the manufacturer is the lender to the jobber, the jobber to the wholesaler, and the wholesaler to the retailer. If one per cent discount is given for payment in ten days instead of in thirty days, the rate of interest is a little above 1 per cent for twenty days, or 18 per cent per annum. This form of financing is the most expensive and is granted on the smallest security.

(ii) The loan of capital for short periods is largely the work of banking institutions and note-brokers. The security is better and the interest is lower.

(iii) The loan of capital for long periods is theoretically on still better security and at considerably lower interest rates. The lenders are investors who depend upon the interest for income. Investors will pay more for an income which is stable than for one which is intermittent, even though over a given term of years the actual total yield is the same in both cases. The reason, of course, is that the average investor lives up to his income, and a hundred dollars deducted from next year's income is not compensated by an extra hundred during the present year which by next year will have been spent.

The art of financing is, therefore, simply the capitali-

zation of the net earnings of a concern, by grading a series of loans according to diminishing security and increasing interest, or in President Hadley's words, an increasing "rate of commutation." The term "water" in securities, as it is generally used, is meaningless. Buyers and sellers base their esteem value entirely on probable rates of income and probable stability of earnings. For the entrepreneur both these hazards operate. If now, in the distribution of control of productive wealth, contracts can be drawn by which either probability can be reduced or eliminated, the security will sell on the basis of increased security. A series of skew curves will perhaps illustrate the reasoning.



The interest rates specified in the contract are written along the upper line at the heads of the columns. The distances A to B, B to C, etc., is perhaps 35 per cent in each case. Down the vertical column is the estimated joint probability of getting the given interest regularly. The

skew curves drawn in each column show how the percentage of capital for a given interest is distributed according to risk. It is plain that the area of each curve is 100 per cent, and the total amount at any interest rate and probability is the given ordinate multiplied by the total amount which loans at the given rate of interest.

The probability of obtaining the interest regularly may be approximately discovered from the statistics of earnings over past years. If the business is a stationary one, the chance of failure to pay interest is plainly determined by the difference between the average earnings and the amount required to pay the interest on the issue divided by approximately two-thirds of the standard deviation of the earnings about the average. The risk can from this data be estimated from the probability tables. For instance, if the above result is two, the probability is 4:1; if three, 19:1. This is the real reason why it is safe to capitalize combinations far in excess of cost of plant. If the business is a growing one, the same method may be adopted except a growth axis is now the basis rather than the average, and the probability of failure to pay interest a lessening one, varying with each successive year. This entire field is capable of exact statistical study, and it is in this world of probability and interest that financiers work. Their work is to provide devices for reducing the interest rates, and increasing the ratio C'/C . Thus a concern operating without credit might earn 6 per cent on a capital stock of \$100,000, par value \$100, with a probability of 50 per cent. The fluctuation of profits in different years might range between 4 per cent and 8 per cent. Proper financing with bonds at 4 per cent, \$50,000, preferred stock 5 per cent accumulative, \$40,000, would provide \$90,000 capital and the bonds would have say a security of 90 per cent,

and the preferred stock 70 per cent. This would leave \$10,000 for the owners of the equities to provide. Without credit, the net percentage on capital is 6 per cent. With credit, the net profit is on the average 6 per cent on \$100,000 — (4 per cent on 50,000) — (5 per cent on 40,000) = 6,000 — 2,000 — 2,000 = \$2,000. Two thousand dollars could be under favorable conditions capitalized at $6\frac{2}{3}$ per cent, and the stock sell at par, *i. e.*, \$32,000. The result is an excess of \$22,000 of "water," and since control can be maintained with about 50 per cent ownership, the entrepreneur can withdraw all of his capital, \$10,000, with his share of the water, one-half of \$22,000, \$11,000, and still have \$1,000 clear profit and complete control. This, of course, is not far from the ideal case, where in the expression for gain through credit

$$\frac{C'}{C} (n (1 + p - e) - i),$$

C is steadily diminished until it approaches zero as its limit, and C' is steadily increased to the limit of the credit market, so that the ratio C'/C nearly fulfills the dreams of some of our promoters, an infinite percentage of profit on a zero investment of capital.

(*i*) In summary, therefore, from the standpoint of the distribution of the control of productive wealth, in the line of industrial progress lie all causes or inventions which increase the ratio C'/C (from a simple book credit or personal note up to the intricate financing of the Northern Securities Co.); all causes increasing the factor n (such as time saving processes of manufacturing, advertising and efficient organization); also the factor (p) (for instance special brands which admit of monopoly prices, or that constancy of price schedules, which wide control affords); and to decrease (e) and (i) is also

profitable. Time saving processes and the economic handling of labor as well as the elimination of useless labor, such as competing salesmen, suffice to lower (*e.*) Finally, high finance with its long series of credit instruments, ranged in gradation of increasing security and decreasing interest accomplishes the latter. Indeed, the attitude that credit extension is unproductive seems to me very wide of the mark. The devices which quickly enable the men who can to enter upon the work to which capability has pointed, have arisen not without reason.

To my mind, the situation calls not so much for publicity with respect to the statistics of the private information of the entrepreneur, which is of the nature of patent right and of less value to the public, who cannot analyze, than to the rival who analyzes to complete, as for a campaign of education, which shall teach the advantages and disadvantages of credit instruments from the investor's standpoint with sharp emphasis on the great hazards of common stock, and especially on how very little a common stockholder has a right to expect.